Title: Data Recovery for Virtual Ordered Writes for Multiple Storage Devices
Inventor: Douglas E. LECRONE et al.
Filed: December 1, 2003   Serial No.: To be assigned
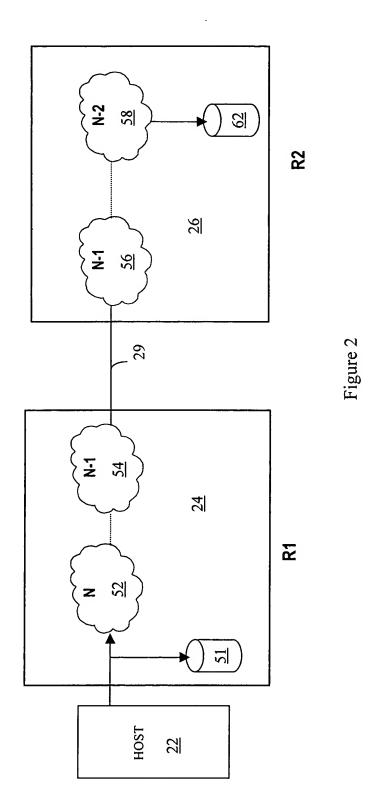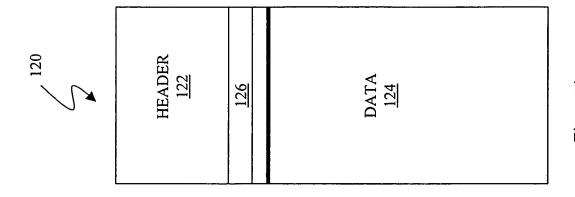Sheet 1 of 22   Docket No.: EMS-07002

FIGURE 1

Title: Data Recovery for Virtual Ordered Writes for Multiple Storage Devices
Inventor: Douglas E. LECRONE et al.
Filed: December 1, 2003   Serial No.: To be assigned
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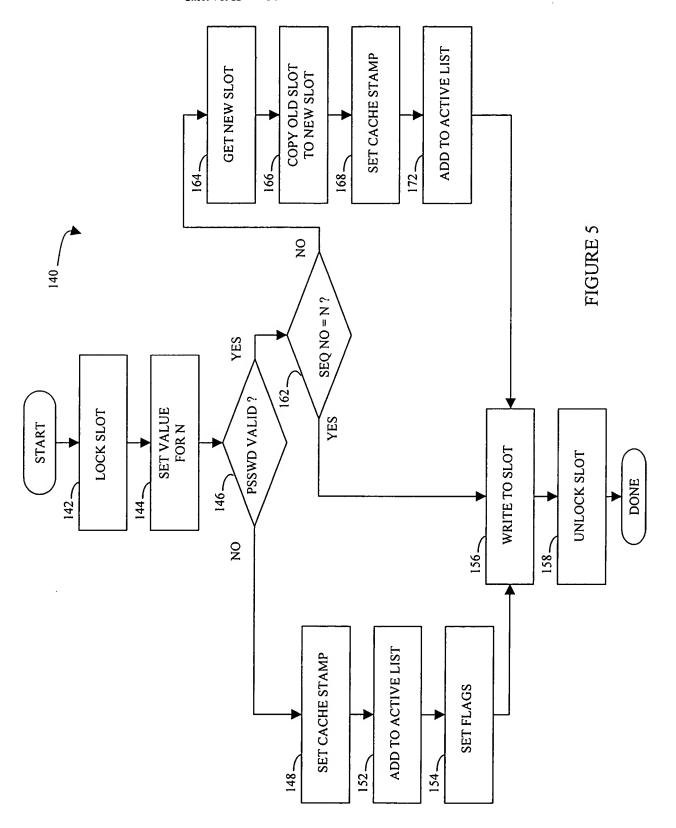
Figure 2

Title: Data Recovery for Virtual Ordered Writes for Multiple Storage Devices
Inventor: Douglas E. LECRONE et al.
Filed: December 1, 2003   Serial No.: To be assigned
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120

| HEADER 122 | 126 | DATA 124 |

Figure 4

70

88

| 102 | 103 | ● ● ● | 104 |

74

76

STD 72

81
82
83
84
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91
92
93
94
95

Figure 3

Title: Data Recovery for Virtual Ordered Writes for Multiple Storage Devices
Inventor: Douglas E. LECRONE et al.
Filed: December 1, 2003   Serial No.: To be assigned
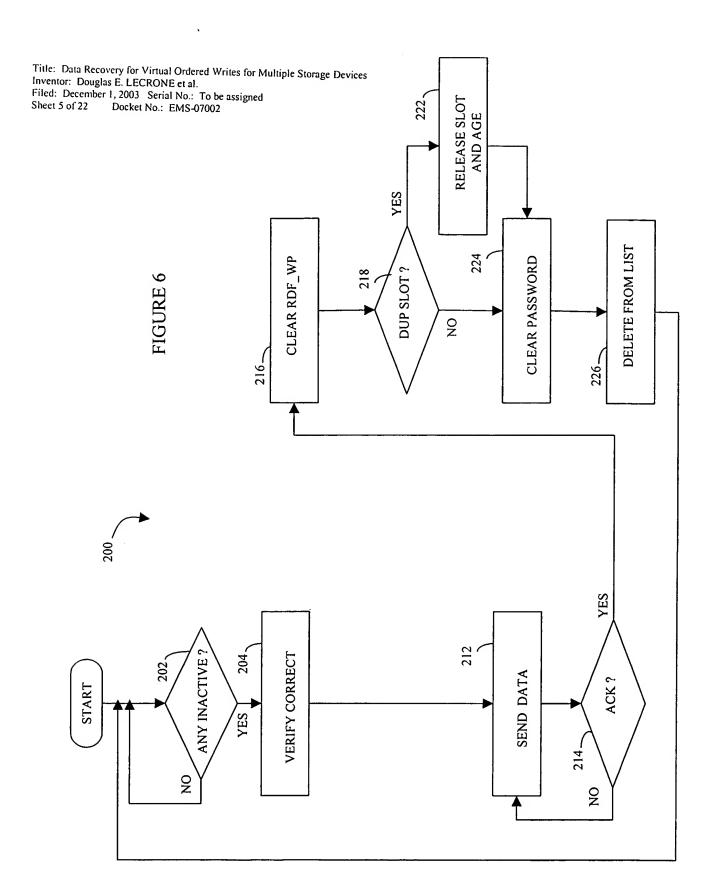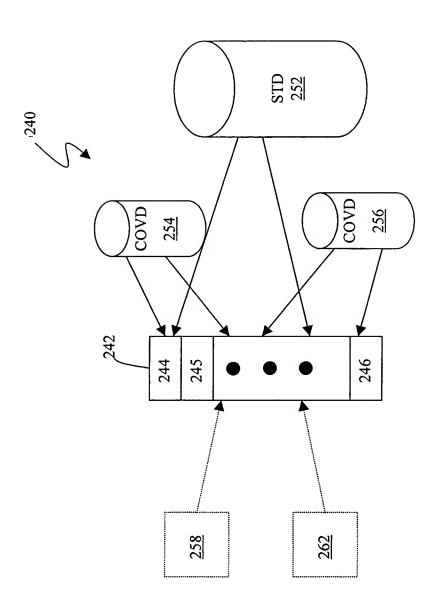Sheet 4 of 22   Docket No.: EMS-07002

FIGURE 5

Title: Data Recovery for Virtual Ordered Writes for Multiple Storage Devices
Inventor: Douglas E. LECRONE et al.
Filed: December 1, 2003   Serial No.: To be assigned
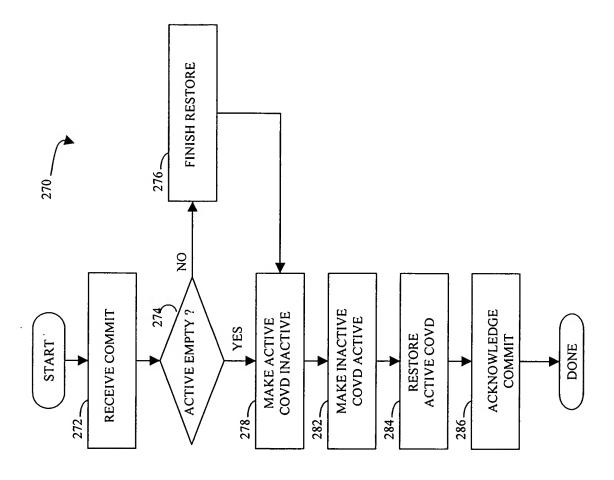Sheet 5 of 22   Docket No.: EMS-07002

FIGURE 6

Title: Data Recovery for Virtual Ordered Writes for Multiple Storage Devices
Inventor: Douglas E. LECRONE et al.
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FIGURE 7

Title: Data Recovery for Virtual Ordered Writes for Multiple Storage Devices
Inventor: Douglas E. LECRONE et al.
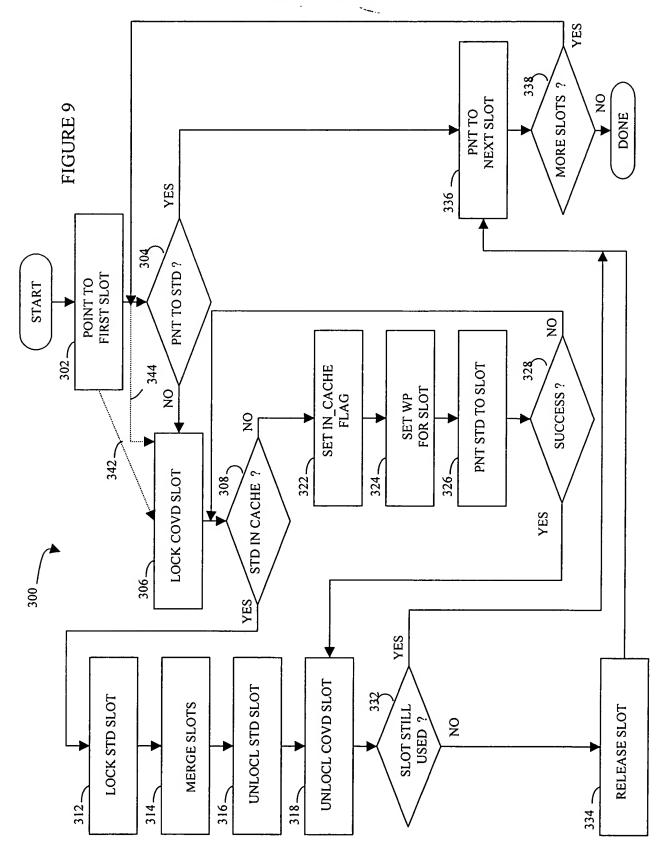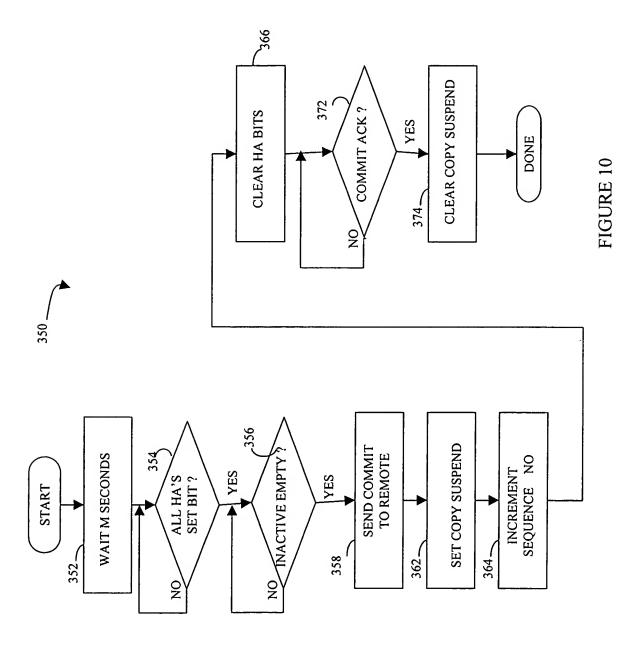Filed: December 1, 2003   Serial No.: To be assigned
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270

START

272 — RECEIVE COMMIT

274 — ACTIVE EMPTY ?

NO — 276 — FINISH RESTORE

YES

278 — MAKE ACTIVE COVD INACTIVE

282 — MAKE INACTIVE COVD ACTIVE

284 — RESTORE ACTIVE COVD

286 — ACKNOWLEDGE COMMIT

DONE

FIGURE 8

Title: Data Recovery for Virtual Ordered Writes for Multiple Storage Devices
Inventor: Douglas E. LECRONE et al.
Filed: December 1, 2003   Serial No.: To be assigned
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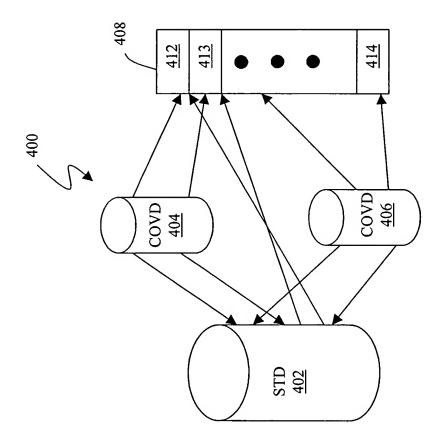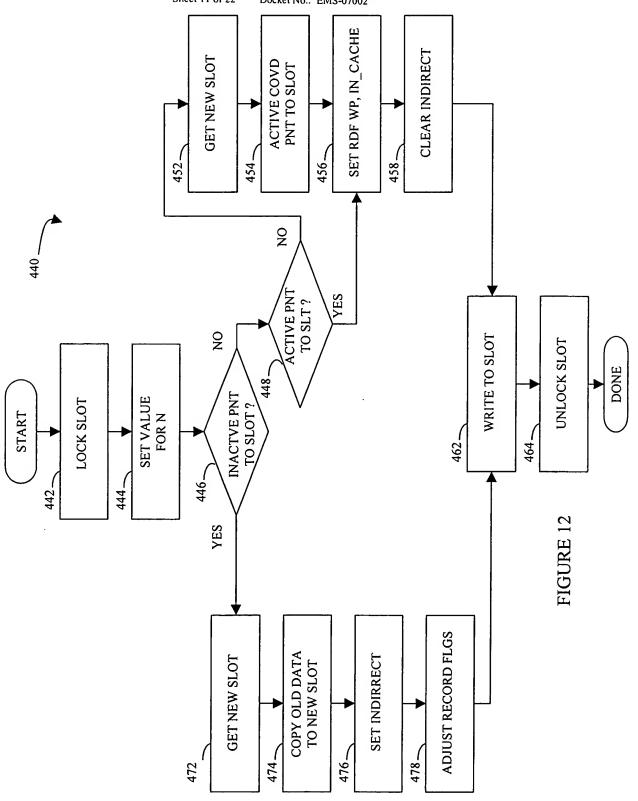## FIGURE 9

Title: Data Recovery for Virtual Ordered Writes for Multiple Storage Devices
Inventor: Douglas E. LECRONE et al.
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FIGURE 10

START

WAIT M SECONDS — 352

ALL HA'S SET BIT ? — 354
NO
YES

INACTIVE EMPTY ? — 356
NO
YES

SEND COMMIT TO REMOTE — 358

SET COPY SUSPEND — 362

INCREMENT SEQUENCE NO — 364

350

CLEAR HA BITS — 366

COMMIT ACK ? — 372
NO
YES

CLEAR COPY SUSPEND — 374

DONE

Title: Data Recovery for Virtual Ordered Writes for Multiple Storage Devices
Inventor: Douglas E. LECRONE et al.
Filed: December 1, 2003   Serial No.: To be assigned
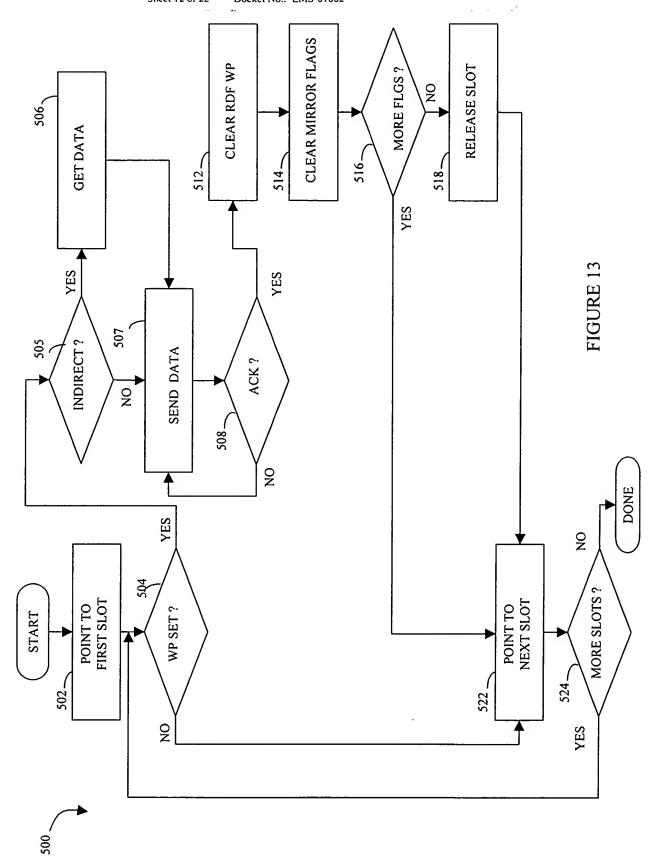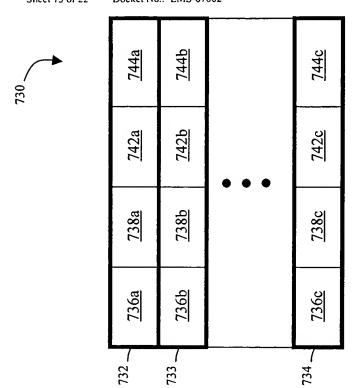Sheet 10 of 22   Docket No.: EMS-07002

Figure 11

Title: Data Recovery for Virtual Ordered Writes for Multiple Storage Devices
Inventor: Douglas E. LECRONE et al.
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FIGURE 12

Title: Data Recovery for Virtual Ordered Writes for Multiple Storage Devices
Inventor: Douglas E. LECRONE et al.
Filed: December 1, 2003   Serial No.: To be assigned
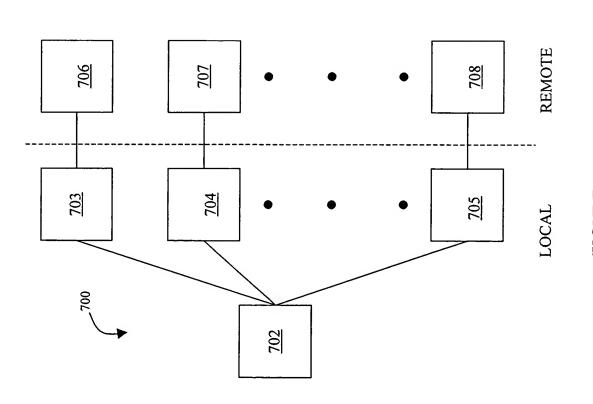Sheet 12 of 22   Docket No.: EMS-07002

FIGURE 13

Title: Data Recovery for Virtual Ordered Writes for Multiple Storage Devices
Inventor: Douglas E. LECRONE et al.
Filed: December 1, 2003   Serial No.: To be assigned
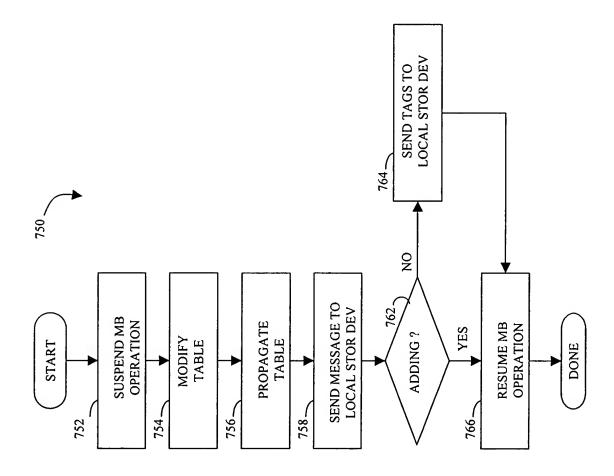Sheet 13 of 22   Docket No.: EMS-07002

FIGURE 15

FIGURE 14

Title: Data Recovery for Virtual Ordered Writes for Multiple Storage Devices
Inventor: Douglas E. LECRONE et al.
Filed: December 1, 2003   Serial No.: To be assigned
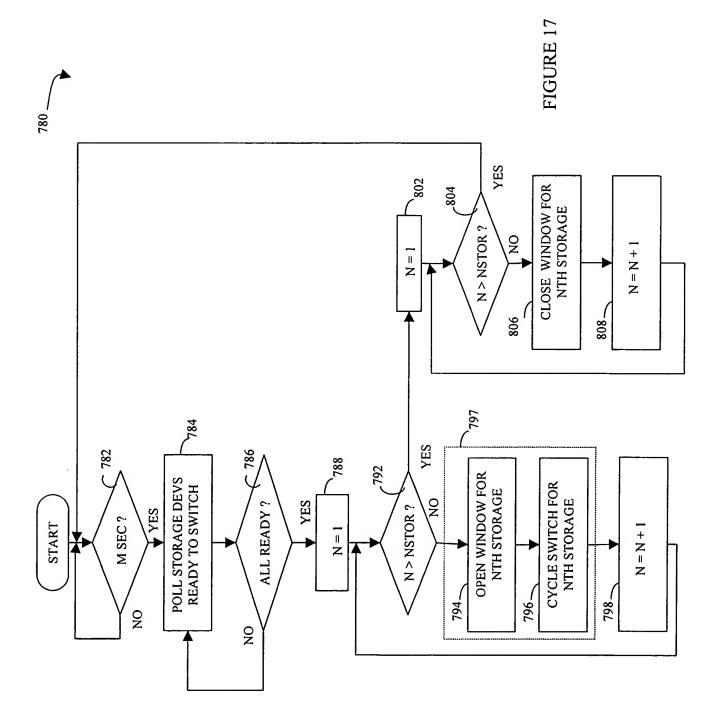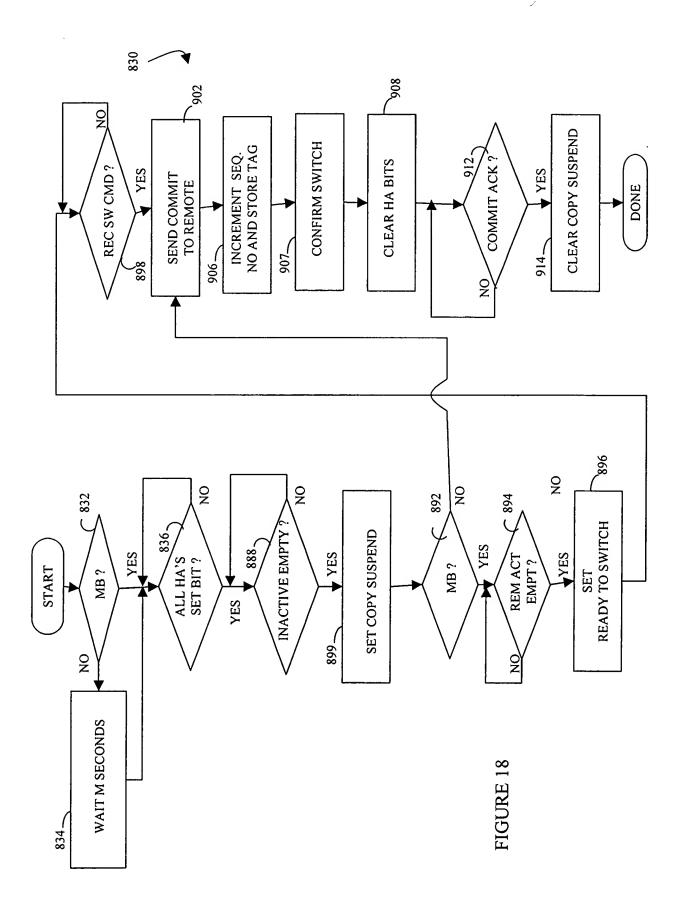Sheet 14 of 22   Docket No.: EMS-07002

750

START

752 — SUSPEND MB OPERATION

754 — MODIFY TABLE

756 — PROPAGATE TABLE

758 — SEND MESSAGE TO LOCAL STOR DEV

762 — ADDING ?

NO → 764 — SEND TAGS TO LOCAL STOR DEV

YES

766 — RESUME MB OPERATION

DONE

FIGURE 16

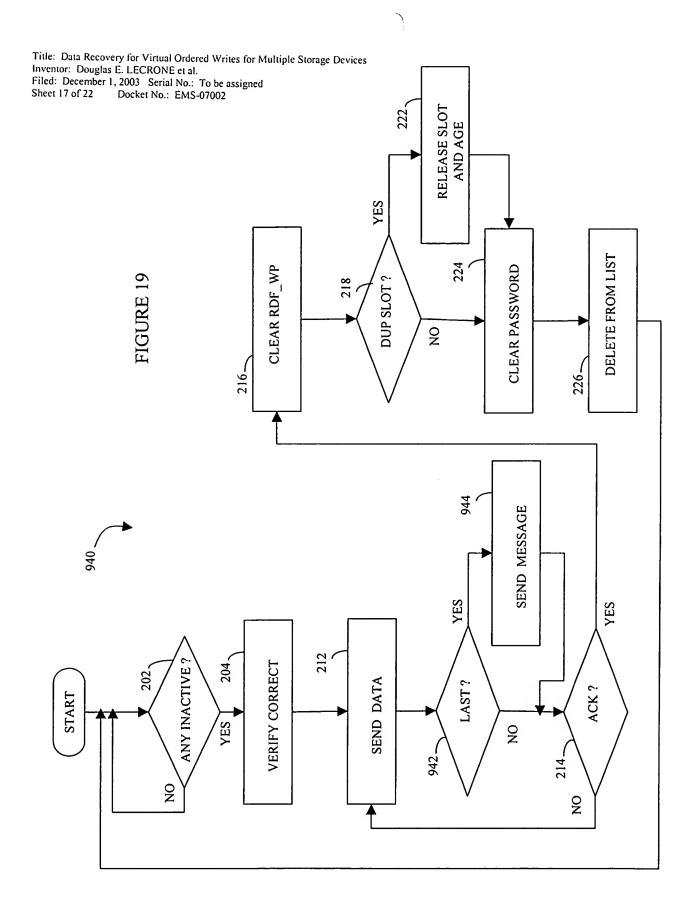Title: Data Recovery for Virtual Ordered Writes for Multiple Storage Devices
Inventor: Douglas E. LECRONE et al.
Filed: December 1, 2003   Serial No.: To be assigned
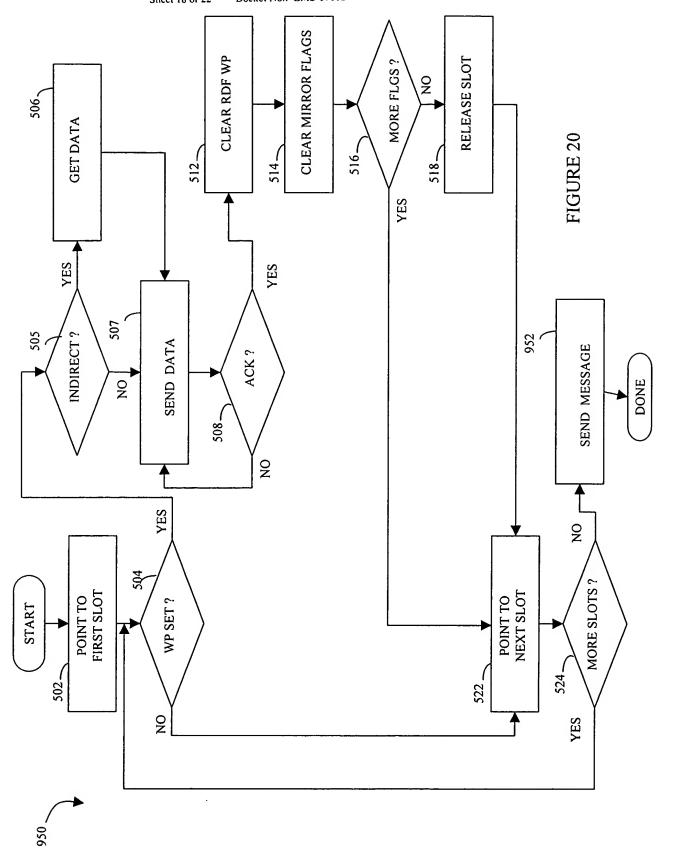Sheet 15 of 22   Docket No.: EMS-07002

FIGURE 17

Title: Data Recovery for Virtual Ordered Writes for Multiple Storage Devices
Inventor: Douglas E. LECRONE et al.
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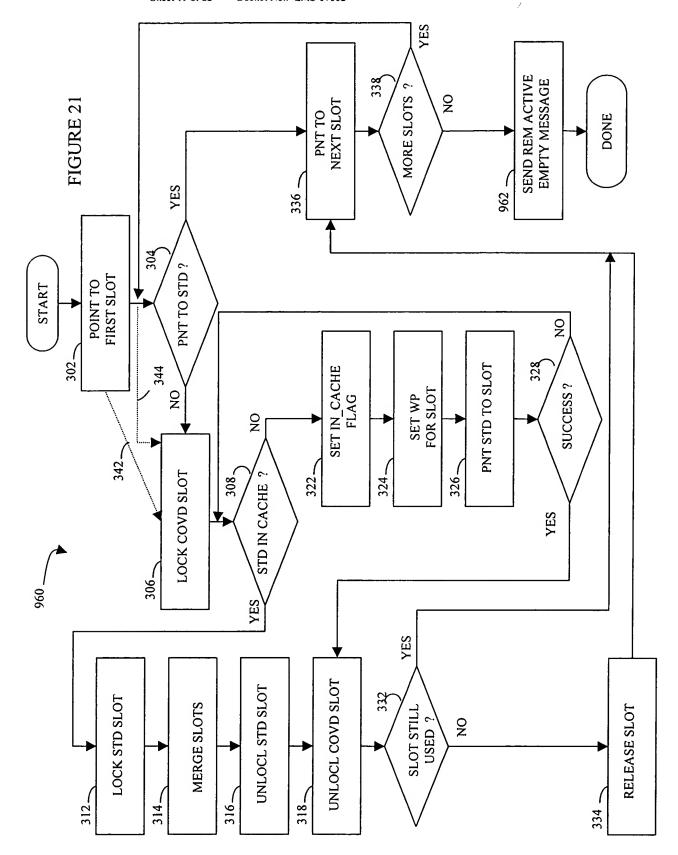
FIGURE 18

FIGURE 19

Title: Data Recovery for Virtual Ordered Writes for Multiple Storage Devices
Inventor: Douglas E. LECRONE et al.
Filed: December 1, 2003   Serial No.: To be assigned
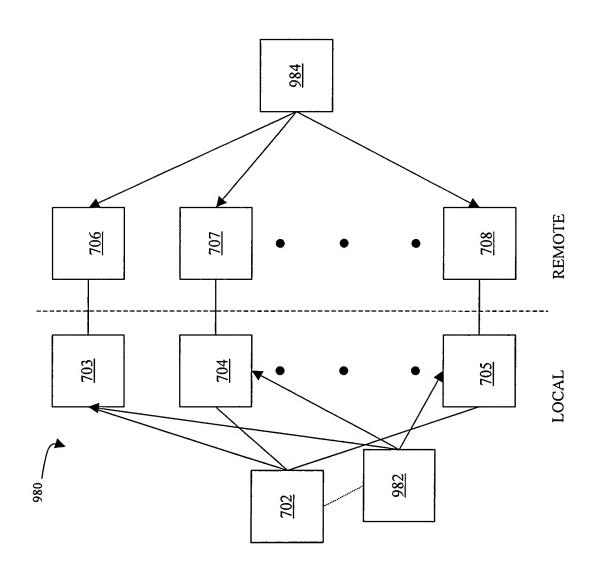Sheet 18 of 22   Docket No.: EMS-07002

FIGURE 20

Title: Data Recovery for Virtual Ordered Writes for Multiple Storage Devices
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FIGURE 21

Title: Data Recovery for Virtual Ordered Writes for Multiple Storage Devices
Inventor: Douglas E. LECRONE et al.
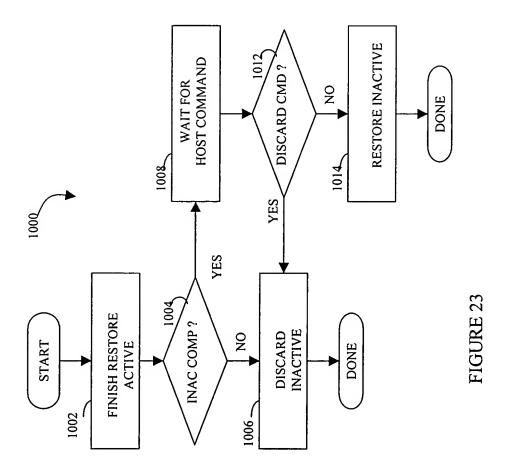Filed: December 1, 2003   Serial No.: To be assigned
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FIGURE 22

Title: Data Recovery for Virtual Ordered Writes for Multiple Storage Devices
Inventor: Douglas E. LECRONE et al.
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FIGURE 23

Title: Data Recovery for Virtual Ordered Writes for Multiple Storage Devices
Inventor: Douglas E. LECRONE et al.
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FIGURE 24